



**ENVIRONMENTAL • GEOTECHNICAL  
BUILDING SCIENCES • MATERIALS TESTING**

**GROUNDWATER & LANDFILL GAS MONITORING REPORT NO. 7  
THE FORMER PORTSMOUTH LANDFILL  
PARK AVENUE  
PORTSMOUTH, RI 02871**

**ATC PROJECT NO. 3010000238**

PREPARED FOR:

AP ENTERPRISE LLC  
28 TEAL DRIVE  
WAKEFIELD, RHODE ISLAND 02879

PREPARED BY:

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## 1.0 INTRODUCTION

ATC Group Services LLC (ATC) was retained by AP Enterprise to install four (4) groundwater monitoring wells and a total of eleven (11) landfill gas monitoring points, and to conduct two years of quarterly groundwater and landfill gas monitoring at the former Portsmouth Landfill located on Park Avenue in Portsmouth, Rhode Island (the Site). The objective of this work is to support the Rhode Island Department of Environmental Management (RIDEM) approved Site Monitoring Plan as prepared by Tim O'Connor & Company LLC. This is the seventh quarterly report prepared by ATC.

### 1.1 Site Location and Description

The entrance to the former Portsmouth Landfill is located 500 feet west-northwest of the intersection formed by Boyds Lane and Park Avenue. The property is identified by the Portsmouth Tax Assessor as Plat 20 Lots 1, 2 & 13 and Plat 25 Lot 2 (the Site). The Site encompasses approximately 15.02 acres. The ground surface is generally level, with downward slopes along the landfill margins. A Site Locus Map and a Site Plan are included as **Figures 1 and 2** respectively.

On April 25, 2017, four soil borings were completed as groundwater monitoring wells MW-1, MW-2, MW-3 and MW-4. The four groundwater monitoring wells were constructed using two-inch diameter polyvinyl chloride (PVC) riser and 10 to 15 feet of machine-slotted 0.01 inch well screen. The well screens were placed to intercept the groundwater table. Groundwater monitoring well locations are depicted on **Figure 2**.

## 2.0 FIELD ACTIVITIES

The following activities were conducted to evaluate the potential presence of contamination in soil gas and groundwater as a result of historic landfill activities.

### 2.1 Monitoring Well Gauging and Area Groundwater Flow

On January 9, 2019, ATC gauged depth to groundwater in the four groundwater monitoring wells using a Solinst electronic oil/water interface probe. Depth to groundwater was measured from the top of the PVC well risers and ranged from 8.84 feet in MW-1 to 16.40 feet in MW-3. Non-aqueous phase liquids were not detected on the groundwater surface, or in the bottom of the wells. Based upon the groundwater elevation data, the groundwater gradient is generally toward the south on the southern portion of the Site, and to the west on the northern portion of the Site. A Water Level Gauging Sheet is provided as **Table 1**. Groundwater Contours are included on **Figure 2**.

### 2.2 Groundwater Sampling and Analysis

On January 9, 2019, ATC completed the seventh quarterly groundwater sampling round. The groundwater samples were obtained using the USEPA's Low Stress Purging and Sampling Procedure (EQA SOP-GW-001). ATC used a variable speed low-flow peristaltic pump to control the rate of purging and limit the drawdown. Disposable polyethylene tubing was used at each well. Field parameters were recorded during sampling using a YSI Pro Series with flow-through cell and LaMotte turbidity meter. Field parameters included pH, water temperature, specific

conductance, oxidation reduction potential (ORP) and dissolved oxygen. The groundwater samples were collected upon parameter stabilization, and contained in laboratory grade pre-preserved sample containers. The samples were chilled in a cooler and transported under Chain of Custody to the ESS Laboratory. ESS analyzed the samples for volatile organic compounds (VOCs) by EPA Method 8260, and metals by EPA Methods 6010 and 7010.

### 2.3 Groundwater Analytical Results

No metals or VOCs were reported in excess of the RIDEM GA Groundwater Objectives. Detected analytes included barium in MW-1 and MW-2; barium, 1,4-dichlorobenzene, chlorobenzene, dichlorodifluoromethane and isopropylbenzene in MW-3; and barium, cadmium, copper, nickel, and zinc in MW-4. The groundwater analytical data is summarized on **Table 2**. The laboratory analytical report is included in **Appendix A**.

### 2.4 Soil Gas Point Installation

Four permanent SGPs (SG-1, SG-2, SG-3 and SG-4) were installed in April of 2017. Each of the four SGPs were installed in the unsaturated zone, using a Geoprobe brand 21" stainless soil gas implant. The depth of placement was determined by the existing depth to groundwater at each location, which ranged from approximately four to ten feet below grade. Each SGP was backfilled with uniform grade, silica sand to approximately one foot above the screen section. Approximately one foot of bentonite was placed above each SGP to seal it from surface water intrusion. Each SGP was connected to 3/8" by 1/4" tubing that was brought to the ground surface. At the ground surface, the SGP tubing was protected by a two-inch, by five-foot lockable standpipe cemented at grade.

At the request of RIDEM, AP Enterprise directed ATC to install an additional seven permanent soil gas points (SGPs) along the Site boundary, near monitoring point SG-3. SG-3 is the only SGP to have exceeded methane's lower explosive limit (LEL) of 5% and the RIDEM limit of 25% of the LEL (1.25%). On April 13, 2018, ATC installed seven peripheral SGPs (SG-5, SG-6, SG-7, SG-8, SG-9, SG-10 and SG-11), located every 50 feet along the edge of the Site boundary near SG-3. The seven SGPs were installed in the vadose zone to a depth of 2.5 feet below grade using a slam bar and 1/4 inch OD polyethylene tubing terminating with an AMS slotted stainless steel soil gas point. The SGPs were secured at grade with a small concrete pad.

The eleven (11) peripheral SGPs are positioned to monitor for potential landfill gas migration away from the solid waste mound. These points are positioned between the landfill mound boundary and the nearby habitable structures. SGP locations are shown on **Figure 2**.

### 2.5 Soil Gas Monitoring

On January 9, 2019, ATC conducted the seventh quarterly round of landfill gas monitoring. Soil gas methane, hydrogen sulfide, oxygen and carbon dioxide concentrations were measured at each monitoring point using a Landtech Gem 5000 Landfill Gas Analyzer. Additionally, ambient temperature, barometric pressure, wind speed and wind direction were measured and recorded. SGPs are depicted on **Figure 2**. The soil gas monitoring results are summarized on **Table 3**.

On January 9, 2019, methane was detected in monitoring point SG-3 only, at a concentration of 16.0%, which exceeds methane's lower and upper explosive limits of 5% to 15%. The seven

other fence-line monitoring points near SG-3 (SG-5 through SG-11) were “non-detect” for methane. Therefore, the measured methane concentrations in the perimeter monitoring points did not exceed the RIDEM Solid Waste Regulation No. 2, Section 2.3.08 (d), of 25% of the LEL (1.25%) at the Site boundary. Hydrogen sulfide was detected at monitoring point SG-3 only, at 4%. The carbon dioxide concentrations ranged from less than 0.1% to 11.7% at SG-3. The oxygen concentrations ranged from atmospheric (approximately 21.2%) down to less than 0.1% at SG-3. The soil gas monitoring results are summarized in **Table 3**.

### **3.0 CONCLUSIONS**

ATC has performed the seventh quarterly groundwater and landfill gas monitoring at the former Portsmouth town landfill on Park Avenue in Portsmouth, Rhode Island. Based upon the scope of work and sampling activities completed, ATC concludes the following:

- No metals and no VOCs were reported at concentrations exceeding GA Groundwater Objectives in the four groundwater samples collected on January 9, 2019.
- The soil gas methane concentration measured on January 9, 2019 at SG-3 (16.0%) is the highest observed concentration since monitoring began in May 2017. The other 10 monitoring points were “non-detect” for methane. During this sampling event, the observed methane concentration at SGP SG-3 exceeds the methane lower and upper explosive limits of 5% and 15% respectively. The fence-line methane concentrations did not exceed the RIDEM Solid Waste Regulation No. 2, Section 2.3.08 (d), of 25% of the LEL (1.25%) at the Site boundary.
- The closest building to SG-3 is located approximately 200 feet to the east. In ATC’s opinion, current conditions do not constitute a threat, however conditions will be closely monitored.
- Hydrogen sulfide was detected at monitoring point SG-3 at 4%. The carbon dioxide concentrations at the monitoring points ranged from less than 0.1% to 11.7% at SG-3. The oxygen concentrations ranged from atmospheric (approximately 21.2%) down to less than 0.1% at SG-3.

## **TABLES**

**TABLE 1**

**WATER LEVEL MEASUREMENTS**

<i>Location:</i>	Portsmouth Landfill, Park Ave.	<i>ATC #</i>	3010000238
<i>Client:</i>	AP Enterprise LLC	<i>Date:</i>	1/9/2019
<i>Instrument:</i>	ORS Interface Probe	<i>Gauged By:</i>	AK
<i>Checked By:</i>	SG		

WELL #	M.P. ELEVATIONS	DEPTH TO PRODUCT	DEPTH TO WATER	PRODUCT THICKNESS	EQUIVALENT HD ELEV.
MW-1	8.84	---	6.00	0.00	2.84
MW-2	16.25	---	12.79	0.00	3.46
MW-3	16.40	---	13.07	0.00	3.33
MW-4	14.09	---	11.33	0.00	2.76

**NOTES:**

Height of PVC; MW-1: 3.21, MW-2: 4.01, MW-3: 3.27, MW-4: 2.97

Survey completed by DiPrete Engineering (6/15/17)

Table 2

**Groundwater Analytical Results  
Former Portsmouth Town Landfill  
Park Avenue, Portsmouth, Rhode Island**

Well ID	Date	Antimony	Barium	Cadmium	Copper	Lead	Nickel	Selenium	Zinc	1,4-Dichlorobenzene	Chlorobenzene	Chloroform	Dichlorodifluoro methane	Diethyl Ether	Isopropylbenzene
MW-1	5/31/17	ND (0.025)	<b>0.062</b>	ND (0.0025)	ND (0.010)	ND (0.002)	ND (0.025)	ND (0.005)	ND (0.025)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	9/8/17	ND (0.002)	<b>0.068</b>	ND (0.0025)	ND (0.010)	ND (0.002)	ND (0.025)	ND (0.005)	ND (0.025)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	12/21/17	ND (0.002)	<b>0.101</b>	ND (0.0025)	ND (0.010)	ND (0.010)	ND (0.025)	ND (0.025)	<b>0.034</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	4/13/18	ND (0.0005)	<b>0.050</b>	ND (0.0025)	ND (0.010)	ND (0.010)	ND (0.025)	ND (0.025)	ND (0.025)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	7/31/18	ND (0.0005)	<b>0.060</b>	ND (0.0025)	ND (0.010)	ND (0.010)	ND (0.025)	ND (0.025)	<b>0.031</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	10/30/18	ND (0.001)	<b>0.135</b>	ND (0.0025)	<b>0.030</b>	ND (0.010)	ND (0.025)	ND (0.005)	<b>0.137</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	1/9/19	ND (0.002)	<b>0.059</b>	ND (0.0025)	ND (0.010)	ND (0.010)	ND (0.025)	ND (0.005)	ND (0.025)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
MW-2	5/31/17	ND (0.025)	<b>0.084</b>	ND (0.0025)	ND (0.010)	<b>0.005</b>	ND (0.025)	ND (0.005)	<b>0.044</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	9/8/17	ND (0.002)	<b>0.177</b>	ND (0.0025)	ND (0.010)	ND (0.010)	ND (0.025)	ND (0.005)	(ND 0.025)	ND (0.0010)	<b>0.0012</b>	ND (0.0010)	ND (0.0020)	ND (0.0010)	<b>0.0034</b>
	12/21/17	ND (0.002)	<b>0.187</b>	ND (0.0025)	ND (0.010)	<b>0.014</b>	ND (0.025)	ND (0.025)	<b>0.089</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	4/13/18	ND (0.0005)	<b>0.094</b>	ND (0.0025)	<b>0.017</b>	ND (0.010)	ND (0.025)	ND (0.025)	<b>0.051</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	7/31/18	ND (0.0005)	<b>0.119</b>	ND (0.0025)	ND (0.010)	ND (0.010)	ND (0.025)	ND (0.025)	<b>0.060</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	<b>0.0012</b>
	10/30/18	ND (0.001)	<b>0.141</b>	ND (0.0025)	ND (0.010)	<b>0.011</b>	ND (0.025)	ND (0.025)	<b>0.051</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	1/9/19	ND (0.002)	<b>0.070</b>	ND (0.0025)	ND (0.010)	ND (0.010)	ND (0.025)	ND (0.005)	ND (0.025)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
MW-3	5/31/17	ND (0.025)	<b>0.681</b>	ND (0.0025)	ND (0.010)	ND (0.002)	ND (0.025)	ND (0.005)	<b>0.035</b>	<b>0.0011</b>	<b>0.0040</b>	ND (0.0010)	ND (0.0020)	<b>0.0011</b>	<b>0.0240</b>
	9/8/17	ND (0.002)	<b>0.606</b>	ND (0.0025)	ND (0.010)	<b>0.027</b>	ND (0.025)	ND (0.005)	ND (0.025)	ND (0.0010)	<b>0.0026</b>	ND (0.0010)	ND (0.0020)	<b>0.0014</b>	<b>0.0025</b>
	12/21/17	ND (0.002)	<b>1.01</b>	ND (0.0025)	ND (0.010)	<b>0.025</b>	ND (0.025)	ND (0.025)	ND (0.025)	<b>0.0010</b>	<b>0.0029</b>	ND (0.0010)	<b>0.0073</b>	<b>0.0017</b>	<b>0.0191</b>
	4/13/18	ND (0.0005)	<b>0.460</b>	ND (0.0025)	ND (0.010)	ND (0.010)	ND (0.025)	<b>0.029</b>	ND (0.025)	<b>0.0012</b>	<b>0.0082</b>	ND (0.0010)	<b>0.0051</b>	ND (0.0010)	<b>0.0117</b>
	7/31/18	ND (0.0005)	<b>0.654</b>	ND (0.0025)	ND (0.010)	ND (0.010)	ND (0.025)	ND (0.025)	ND (0.025)	ND (0.0010)	<b>0.0036</b>	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	10/30/18	ND (0.001)	<b>0.607</b>	ND (0.0025)	ND (0.010)	ND (0.010)	ND (0.025)	ND (0.005)	<b>0.027</b>	ND (0.0010)	<b>0.0024</b>	ND (0.0010)	ND (0.0020)	<b>0.0012</b>	<b>0.0020</b>
	1/9/19	ND (0.002)	<b>0.519</b>	ND (0.0025)	ND (0.010)	ND (0.010)	ND (0.025)	ND (0.005)	ND (0.025)	<b>0.0013</b>	<b>0.0053</b>	ND (0.0010)	<b>0.0068</b>	ND (0.0010)	<b>0.0050</b>
MW-4	5/31/17	ND (0.025)	<b>0.050</b>	<b>0.0043</b>	<b>0.057</b>	ND (0.002)	<b>0.042</b>	ND (0.005)	<b>1.53</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	9/8/2017	ND (0.002)	<b>0.030</b>	<b>0.0025</b>	<b>0.021</b>	ND (0.002)	ND (0.025)	ND (0.005)	<b>0.562</b>	ND (0.0010)	ND (0.0010)	<b>0.0014</b>	ND (0.0020)	ND (0.0010)	ND (0.0010)
	12/21/17	ND (0.002)	<b>0.040</b>	ND (0.0025)	<b>0.017</b>	ND (0.010)	ND (0.025)	ND (0.025)	<b>0.264</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	4/13/18	ND (0.002)	<b>0.0490</b>	<b>0.0036</b>	<b>0.043</b>	ND (0.010)	<b>0.055</b>	ND (0.025)	<b>1.90</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	7/31/18	ND (0.0005)	<b>0.032</b>	ND (0.0025)	<b>0.031</b>	ND (0.010)	ND (0.025)	ND (0.025)	<b>0.806</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	10/30/18	ND (0.001)	<b>0.070</b>	<b>0.0044</b>	<b>0.052</b>	ND (0.010)	<b>0.036</b>	ND (0.005)	<b>1.50</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
	1/9/19	ND (0.002)	<b>0.060</b>	<b>0.0030</b>	<b>0.062</b>	ND (0.010)	<b>0.059</b>	ND (0.005)	<b>1.88</b>	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0020)	ND (0.0010)	ND (0.0010)
<b>RIDEM GA Groundwater Objectives</b>		<b>0.006</b>	<b>2</b>	<b>0.005</b>	<b>NS</b>	<b>0.015</b>	<b>0.1</b>	<b>0.05</b>	<b>NS</b>	<b>0.075</b>	<b>0.1</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>

Notes: All units in mg/L = milligrams per liter unless otherwise noted  
 NS = No Standard  
 NA = Not Available or Not Analyzed  
 ND = not detected above method detection limit  
 Highlighted Exceeds RIDEM GA Groundwater Objective



Table 3

**Soil Gas Monitoring Data  
Former Portsmouth Landfill  
Park Avenue, Portsmouth, RI**

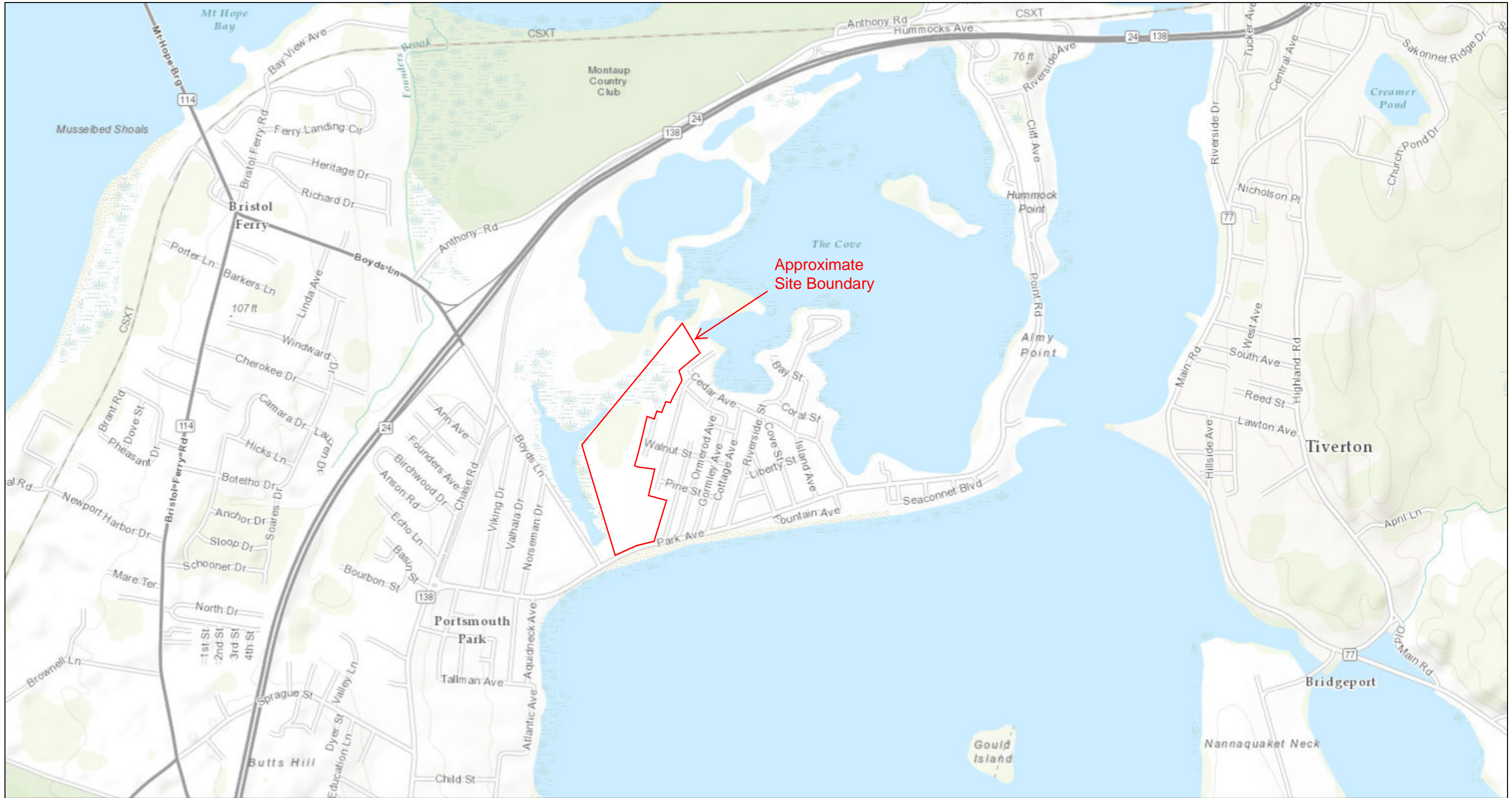
Location	Date	Ambient					Soil Gas					
		Temperature (F°)	Barometric Pressure (Inches Hg)	Wind Velocity (Miles Per Hour)	Wind Direction	Ambient Methane (CH4) (%)	Ambient Oxygen (O2) (%)	Soil Gas Methane (CH4) (%)	Soil Gas Oxygen (O2) (%)	Soil Gas Hydrogen Sulfide (H <sub>2</sub> S) (ppm)	Soil Gas LEL (%)	C02 (%)
SG-1	5/30/2017	54	30.24	4	SE	0.0	20.5	0	20.5	0	0	0
	9/8/2017	72	30.03	5	S	0.0	19.2	0	19.1	0	0	0
	12/21/2017	32	30.24	8	NW	0.2	21.6	0	21.2	0	0	0
	4/13/2018	45	29.92	6	SSW	0.0	21.9	0	21.6	0	0	0
	7/31/2018	85	30.14	1	S	0.0	19.4	0	19.4	0	0	0
	10/30/2018	50	29.97	8	SSE	0.0	20.9	0	20.8	0	0	0.1
1/9/2019	43	29.38	5	S	0.0	20.8	0	20.8	0	0	0.1	
SG-2	5/30/2017	56	30.22	6	SE	0.0	20.6	0	20.6	0	0	0
	9/8/2017	72	30.03	8	S	0.0	19.4	0	19.3	0	0	0
	12/21/2017	32	30.24	10	NW	0.0	21.6	0	21.4	0	0	0
	4/13/2018	72	30.03	8	S	0.0	19.4	0	19.3	0	0	0
	7/31/2018	85	30.15	12	SW	0.0	19.8	0	19.7	0	0	0.1
	10/30/2018	50	29.95	8	SE	0.0	21.1	0	20.9	0	0	0.1
1/9/2019	43	29.34	10	S	0.0	21.2	0	21.2	0	0	0	
SG-3	5/30/2017	56	30.22	6	SE	0.0	20.4	9.7	1.3	0	>100	12.5
	9/8/2017	73	30.04	4	SE	0.0	19.7	4.1	11.7	0	87	5.0
	12/21/2017	32	30.24	10	NW	0.0	21.6	4.6	7.8	0	90	9.0
	4/13/2018	73	30.04	4	SE	0.0	19.7	4.1	11.7	0	87	5.0
	7/31/2018	85	30.16	12	SW	0.0	19.7	7.7	5.2	2	>100	10.4
	10/30/2018	51	29.95	10	SSE	0.0	21.8	13.5	0.2	4	>100	2.0
1/9/2019	42	29.33	12	S	0.0	21.3	16.0	0.0	4	>100	11.7	
SG-4	5/30/2017	56	30.20	8	SE	0.0	20.1	0	19.6	0	0	0.2
	9/8/2017	73	30.05	6	SE	0.0	19.2	0	18.5	0	0	0.4
	12/21/2017	32	30.24	6	NW	0.0	21.6	0	21.0	0	0	0.5
	4/13/2018	73	30.05	6	SE	0.0	19.2	0	18.5	0	0	0.4
	7/31/2018	85	30.13	1	S	0.0	19.7	0	19.3	0	0	0.4
	10/30/2018	55	29.96	14	SSE	0.0	21.7	0	18.8	0	0	15.3
1/9/2019	43	29.34	10	S	0.0	21.6	0	18.7	0	0	2.1	
SG-5	4/13/2018	45	29.92	6	SSW	0.0	21.9	0	20.1	0	0	0.7
	7/31/2018	85	30.16	12	SW	0.0	19.9	0	17.0	0	0	3.3
	10/30/2018	51	29.96	7	SE	0.0	21.4	0	13.5	0	0	6.5
	1/9/2019	42	29.33	10	S	0.0	21.2	0	17.0	0	0	3.9
SG-6	4/13/2018	45	29.92	6	SSW	0.0	21.9	0	18.2	0	0	2.6
	7/31/2018	85	30.16	12	SW	0.0	19.9	0	10.3	0	0	8.6
	10/30/2018	51	29.95	7	SSE	0.0	21.5	0	15.3	0	0	6.0
	1/9/2019	42	29.33	15	S	0.0	21.1	0	15.9	0	0	5.0
SG-7	4/13/2018	45	29.92	6	SSW	0.0	21.9	0	17.6	0	0	3.3
	7/31/2018	85	30.16	12	SW	0.0	19.8	0	12.3	0	0	7.9
	10/30/2018	52	29.95	9	SSE	0.0	21.4	0	21.6	0	0	0.1
	1/9/2019	42	29.34	12	S	0.0	21.2	0	20.0	0	0	3.0
SG-8	4/13/2018	45	29.92	6	SSW	0.0	21.9	0	20.7	0	0	0.8
	7/31/2018	85	30.16	12	SW	0.0	19.2	0	18.1	0	0	1.1
	10/30/2018	52	29.95	9	SE	0.0	21.9	0	20.1	0	0	1.7
	1/9/2019	41	29.34	10	S	0.0	21.2	0	19.5	0	0	1.0
SG-9	4/13/2018	45	29.92	6	SSW	0.0	21.9	0	14.9	0	0	5.4
	7/31/2018	85	30.16	12	SW	0.0	19.2	0	13.7	0	0	5.2
	10/30/2018	54	29.94	12	SSE	0.0	21.7	0	13.0	0	0	7.4
	1/9/2019	41	29.33	10	S	0.0	21.3	0	14.4	0	0	4.8
SG-10	4/13/2018	45	29.92	6	SSW	0.0	21.9	0	19.4	0	0	2.2
	7/31/2018	85	30.16	12	SW	0.0	19.3	0	12.9	1	0	5.9
	10/30/2018	53	29.94	14	SE	0.0	21.8	0	5.2	0	0	12.8
	1/9/2019	41	29.33	12	S	0.0	21.3	0	19.0	0	0	5.1
SG-11	4/13/2018	45	29.92	6	SSW	0.0	21.9	0	20.1	0	0	1.4
	7/31/2018	85	30.16	12	SW	0.0	19.6	0	16.3	0	0	1.8
	7/31/2018	85	30.16	12	SW	0.0	19.6	0	16.3	0	0	1.8
	10/30/2018	53	29.94	14	SE	0.0	21.6	0	19.1	0	0	2.1
	1/9/2019	41	29.33	10	S	0.0	21.2	0	18.9	0	0	1.2

Lower explosive limit (LEL) of methane (CH4) is 5%  
Landfill gases measured using a Landtech Gem 2000 Plus Landfill Gas Monitor

## FIGURES



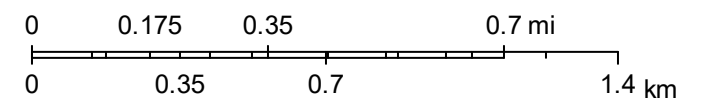
# RIDEM Environmental Resource Map



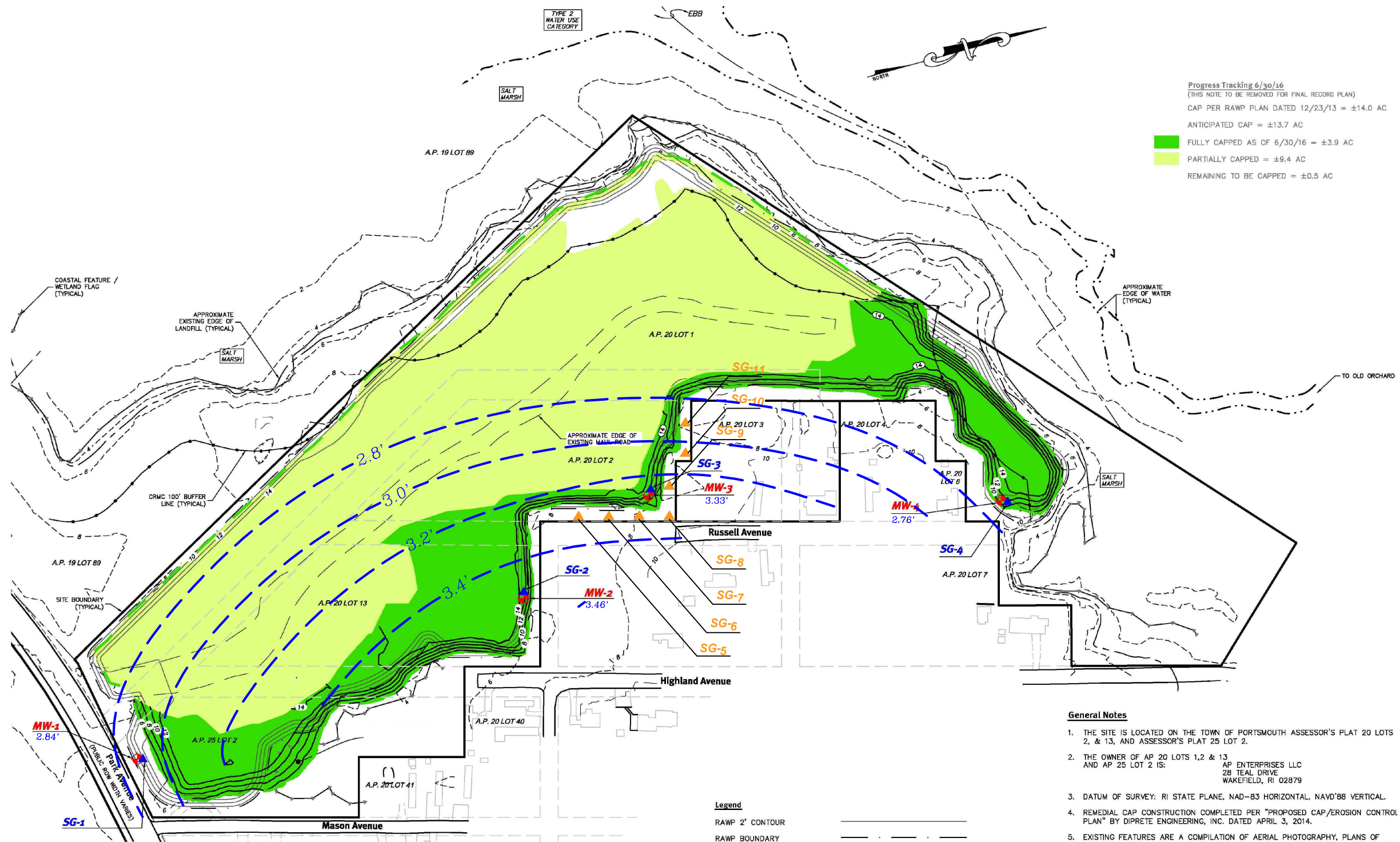
July 7, 2017

Figure 1: Site Locus Map

1:18,056



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS

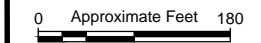


Progress Tracking 6/30/16  
 (THIS NOTE TO BE REMOVED FOR FINAL RECORD PLAN)  
 CAP PER RAWP PLAN DATED 12/23/13 = ±14.0 AC  
 ANTICIPATED CAP = ±13.7 AC  
 FULLY CAPPED AS OF 6/30/16 = ±3.9 AC  
 PARTIALLY CAPPED = ±9.4 AC  
 REMAINING TO BE CAPPED = ±0.5 AC

The base map for this figure was developed from a Diprete Engineering plan entitled "Landfill Monitoring Plan, Former Portsmouth Landfill, revised 07-18-2017."

- Legend**
- RAWP 2' CONTOUR
  - RAWP BOUNDARY
  - FINAL CAP 2' CONTOUR
  - FINAL CAP BOUNDARY
  - EXISTING GROUND 10' CONTOUR
  - EXISTING GROUND 2' CONTOUR
  - PHASE 1 MONITORING WELL
  - PHASE 1 SOIL GAS POINT
  - SUPPLEMENTAL SOIL GAS POINT
  - GROUNDWATER ELEVATION (FEET)
  - GROUNDWATER ELEVATION CONTOUR

- General Notes**
- THE SITE IS LOCATED ON THE TOWN OF PORTSMOUTH ASSESSOR'S PLAT 20 LOTS 2, & 13, AND ASSESSOR'S PLAT 25 LOT 2.
  - THE OWNER OF AP 20 LOTS 1, 2 & 13 AND AP 25 LOT 2 IS:  
 AP ENTERPRISES LLC  
 28 TEAL DRIVE  
 WAKEFIELD, RI 02879
  - DATUM OF SURVEY: RI STATE PLANE, NAD-83 HORIZONTAL, NAVD'88 VERTICAL.
  - REMEDIAL CAP CONSTRUCTION COMPLETED PER "PROPOSED CAP/EROSION CONTROL PLAN" BY DIPRETE ENGINEERING, INC. DATED APRIL 3, 2014.
  - EXISTING FEATURES ARE A COMPILATION OF AERIAL PHOTOGRAPHY, PLANS OF RECORD BY OTHERS, AND ON THE GROUND SURVEY BY DIPRETE ENGINEERING, INC.
  - THIS PLAN DEPICTS PRE-REMEDIAL TOPOGRAPHY OUTSIDE CAP AREA AS SHOWN ON "BOUNDARY & TOPOGRAPHIC SURVEY PLAN - ISLAND PARK" BY WATERMAN ENGINEERING CO. DATED 05/01/07 AND CONVERTED FROM DATUM NGVD29 TO DATUM NGVD88.
  - COASTAL FEATURE AND WETLANDS FLAGS / LINES SHOWN PER "GRADING PLAN, ISLAND PARK, AP 20 LOTS 1, 2 & 13 - AP 25 LOT 2, PORTSMOUTH, RHODE ISLAND" BY WATERMAN ENGINEERING, DATED 01/04/2010. FLAGGING BY VANASSE HANGEN BRUSTLIN, INC. AND LOCATED BY FIELD SURVEY BY WATERMAN ENGINEERING.
- Monitoring Notes**
- PHASE 1 MONITORING WELLS AND SOIL AND GAS POINTS INSTALLED 04/25/2017.
  - SUPPLEMENTAL SOIL GAS POINTS INSTALLED ON 04/13/2018
  - WATER TABLE ELEVATIONS OBTAINED 07/31/2018



NAME/ADDRESS:  
**Prepared for**  
**AP Enterprise LLC**  
**28 Teal Drive, Wakefield, RI 02879**

DRAWING TITLE:  
**Groundwater Elevation Contours**  
**January 9, 2019**  
**Former Portsmouth Landfill**

**ATC** 400 Reservoir Avenue, Suite 2C  
 Providence, RI 0290  
 (401) 714-0306

DRAWN BY:	SG	FIGURE NO.
CHECKED BY:	TO	<b>2</b>
PROJECT NO.	3010000238	
DATE:	11/13/18	

## **APPENDIX A**



## CERTIFICATE OF ANALYSIS

Stephen Gautie  
ATC Group Services  
400 Reservoir Ave Ste 2C  
Providence, RI 02907

**RE: Former Portsmouth Landfill (301.238)**  
**ESS Laboratory Work Order Number: 1901204**

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Laurel Stoddard  
Laboratory Director

**REVIEWED****By ESS Laboratory at 3:31 pm, Jan 21, 2019****Analytical Summary**

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill

ESS Laboratory Work Order: 1901204

**SAMPLE RECEIPT**

The following samples were received on January 10, 2019 for the analyses specified on the enclosed Chain of Custody Record.

<b>Lab Number</b>	<b>Sample Name</b>	<b>Matrix</b>	<b>Analysis</b>
1901204-01	MW-1	Ground Water	6010C, 6020A, 7010, 8260B
1901204-02	MW-2	Ground Water	6010C, 6020A, 7010, 8260B
1901204-03	MW-3	Ground Water	6010C, 6020A, 7010, 8260B
1901204-04	MW-4	Ground Water	6010C, 6020A, 7010, 8260B
1901204-05	Trip Blank	Aqueous	8260B



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
 Client Project ID: Former Portsmouth Landfill

ESS Laboratory Work Order: 1901204

**PROJECT NARRATIVE**

**Total Metals**

- CA91034-BS1 [Blank Spike recovery is above upper control limit \(B+\).](#)  
 Antimony (133% @ 80-120%)
- CA91034-BSD1 [Blank Spike recovery is above upper control limit \(B+\).](#)  
 Antimony (292% @ 80-120%), Thallium (261% @ 80-120%)
- CA91034-BSD1 [Relative percent difference for duplicate is outside of criteria \(D+\).](#)  
 Thallium (86% @ 20%)

**No other observations noted.**

**End of Project Narrative.**

**DATA USABILITY LINKS**

*To ensure you are viewing the most current version of the documents below, please clear your internet cookies for [www.ESSLaboratory.com](http://www.ESSLaboratory.com). Consult your IT Support personnel for information on how to clear your internet cookies.*

- [Definitions of Quality Control Parameters](#)
- [Semivolatile Organics Internal Standard Information](#)
- [Semivolatile Organics Surrogate Information](#)
- [Volatile Organics Internal Standard Information](#)
- [Volatile Organics Surrogate Information](#)
- [EPH and VPH Alkane Lists](#)





*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill

ESS Laboratory Work Order: 1901204

**CURRENT SW-846 METHODOLOGY VERSIONS**

**Analytical Methods**

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015C - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH
- MADEP 04-2.1 - VPH

**Prep Methods**

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: MW-1  
Date Sampled: 01/09/19 11:10  
Percent Solids: N/A

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-01  
Sample Matrix: Ground Water  
Units: mg/L

Extraction Method: 3005A/200.7

**Total Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.002)		6020A		1	NAR	01/17/19 14:34	50	25	CA91034
Arsenic	ND (0.002)		7010		1	KJK	01/12/19 15:36	50	25	CA91034
<b>Barium</b>	<b>0.059</b> (0.025)		6010C		1	KJK	01/11/19 21:36	50	25	CA91034
Beryllium	ND (0.0005)		6010C		1	KJK	01/11/19 21:36	50	25	CA91034
Cadmium	ND (0.0025)		6010C		1	KJK	01/11/19 21:36	50	25	CA91034
Chromium	ND (0.010)		6010C		1	KJK	01/11/19 21:36	50	25	CA91034
Cobalt	ND (0.010)		6010C		1	KJK	01/11/19 21:36	50	25	CA91034
Copper	ND (0.010)		6010C		1	KJK	01/11/19 21:36	50	25	CA91034
Lead	ND (0.010)		6010C		1	KJK	01/11/19 21:36	50	25	CA91034
Nickel	ND (0.025)		6010C		1	KJK	01/11/19 21:36	50	25	CA91034
Selenium	ND (0.005)		7010		1	KJK	01/12/19 20:31	50	25	CA91034
Silver	ND (0.005)		6010C		1	KJK	01/11/19 21:36	50	25	CA91034
Thallium	ND (0.002)		6020A		1	NAR	01/14/19 18:05	50	25	CA91034
Vanadium	ND (0.010)		6010C		1	KJK	01/11/19 21:36	50	25	CA91034
Zinc	ND (0.025)		6010C		1	KJK	01/11/19 21:36	50	25	CA91034



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: MW-1  
Date Sampled: 01/09/19 11:10  
Percent Solids: N/A  
Initial Volume: 5  
Final Volume: 5  
Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-01  
Sample Matrix: Ground Water  
Units: mg/L  
Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,1,1-Trichloroethane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,1,2,2-Tetrachloroethane	ND (0.0005)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,1,2-Trichloroethane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,1-Dichloroethane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,1-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,1-Dichloropropene	ND (0.0020)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,2,3-Trichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,2,3-Trichloropropane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,2,4-Trichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,2,4-Trimethylbenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,2-Dibromo-3-Chloropropane	ND (0.0050)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,2-Dibromoethane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,2-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,2-Dichloroethane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,2-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,3,5-Trimethylbenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,3-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,3-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,4-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1,4-Dioxane - Screen	ND (0.500)		8260B		1	01/10/19 19:07	C9A0169	CA91043
1-Chlorohexane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
2,2-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
2-Butanone	ND (0.0100)		8260B		1	01/10/19 19:07	C9A0169	CA91043
2-Chlorotoluene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
2-Hexanone	ND (0.0100)		8260B		1	01/10/19 19:07	C9A0169	CA91043
4-Chlorotoluene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
4-Isopropyltoluene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
4-Methyl-2-Pentanone	ND (0.0250)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Acetone	ND (0.0100)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Benzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Bromobenzene	ND (0.0020)		8260B		1	01/10/19 19:07	C9A0169	CA91043



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
 Client Project ID: Former Portsmouth Landfill  
 Client Sample ID: MW-1  
 Date Sampled: 01/09/19 11:10  
 Percent Solids: N/A  
 Initial Volume: 5  
 Final Volume: 5  
 Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
 ESS Laboratory Sample ID: 1901204-01  
 Sample Matrix: Ground Water  
 Units: mg/L  
 Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromochloromethane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Bromodichloromethane	ND (0.0006)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Bromoform	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Bromomethane	ND (0.0020)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Carbon Disulfide	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Carbon Tetrachloride	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Chlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Chloroethane	ND (0.0020)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Chloroform	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Chloromethane	ND (0.0020)		8260B		1	01/10/19 19:07	C9A0169	CA91043
cis-1,2-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
cis-1,3-Dichloropropene	ND (0.0004)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Dibromochloromethane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Dibromomethane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Dichlorodifluoromethane	ND (0.0020)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Diethyl Ether	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Di-isopropyl ether	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Ethyl tertiary-butyl ether	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Ethylbenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Hexachlorobutadiene	ND (0.0006)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Hexachloroethane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Isopropylbenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Methyl tert-Butyl Ether	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Methylene Chloride	ND (0.0020)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Naphthalene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
n-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
n-Propylbenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
sec-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Styrene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
tert-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Tertiary-amyl methyl ether	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Tetrachloroethene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: MW-1  
Date Sampled: 01/09/19 11:10  
Percent Solids: N/A  
Initial Volume: 5  
Final Volume: 5  
Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-01  
Sample Matrix: Ground Water  
Units: mg/L  
Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Tetrahydrofuran	ND (0.0050)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Toluene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
trans-1,2-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
trans-1,3-Dichloropropene	ND (0.0004)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Trichloroethene	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Trichlorofluoromethane	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Vinyl Acetate	ND (0.0050)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Vinyl Chloride	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Xylene O	ND (0.0010)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Xylene P,M	ND (0.0020)		8260B		1	01/10/19 19:07	C9A0169	CA91043
Xylenes (Total)	ND (0.0020)		8260B		1	01/10/19 19:07		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	107 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	92 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	101 %		70-130
<i>Surrogate: Toluene-d8</i>	101 %		70-130



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: MW-2  
Date Sampled: 01/09/19 12:25  
Percent Solids: N/A

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-02  
Sample Matrix: Ground Water  
Units: mg/L

Extraction Method: 3005A/200.7

**Total Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.002)		6020A		1	NAR	01/17/19 14:39	50	25	CA91034
Arsenic	ND (0.002)		7010		1	KJK	01/12/19 15:41	50	25	CA91034
<b>Barium</b>	<b>0.070 (0.025)</b>		6010C		1	KJK	01/11/19 21:57	50	25	CA91034
Beryllium	ND (0.0005)		6010C		1	KJK	01/11/19 21:57	50	25	CA91034
Cadmium	ND (0.0025)		6010C		1	KJK	01/11/19 21:57	50	25	CA91034
Chromium	ND (0.010)		6010C		1	KJK	01/11/19 21:57	50	25	CA91034
Cobalt	ND (0.010)		6010C		1	KJK	01/11/19 21:57	50	25	CA91034
Copper	ND (0.010)		6010C		1	KJK	01/11/19 21:57	50	25	CA91034
Lead	ND (0.010)		6010C		1	KJK	01/11/19 21:57	50	25	CA91034
Nickel	ND (0.025)		6010C		1	KJK	01/11/19 21:57	50	25	CA91034
Selenium	ND (0.005)		7010		1	KJK	01/12/19 20:37	50	25	CA91034
Silver	ND (0.005)		6010C		1	KJK	01/11/19 21:57	50	25	CA91034
Thallium	ND (0.002)		6020A		1	NAR	01/14/19 18:21	50	25	CA91034
Vanadium	ND (0.010)		6010C		1	KJK	01/11/19 21:57	50	25	CA91034
Zinc	ND (0.025)		6010C		1	KJK	01/11/19 21:57	50	25	CA91034



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: MW-2  
Date Sampled: 01/09/19 12:25  
Percent Solids: N/A  
Initial Volume: 5  
Final Volume: 5  
Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-02  
Sample Matrix: Ground Water  
Units: mg/L  
Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,1,1-Trichloroethane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,1,2,2-Tetrachloroethane	ND (0.0005)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,1,2-Trichloroethane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,1-Dichloroethane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,1-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,1-Dichloropropene	ND (0.0020)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,2,3-Trichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,2,3-Trichloropropane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,2,4-Trichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,2,4-Trimethylbenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,2-Dibromo-3-Chloropropane	ND (0.0050)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,2-Dibromoethane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,2-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,2-Dichloroethane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,2-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,3,5-Trimethylbenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,3-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,3-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,4-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1,4-Dioxane - Screen	ND (0.500)		8260B		1	01/10/19 19:32	C9A0169	CA91043
1-Chlorohexane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
2,2-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
2-Butanone	ND (0.0100)		8260B		1	01/10/19 19:32	C9A0169	CA91043
2-Chlorotoluene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
2-Hexanone	ND (0.0100)		8260B		1	01/10/19 19:32	C9A0169	CA91043
4-Chlorotoluene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
4-Isopropyltoluene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
4-Methyl-2-Pentanone	ND (0.0250)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Acetone	ND (0.0100)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Benzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Bromobenzene	ND (0.0020)		8260B		1	01/10/19 19:32	C9A0169	CA91043



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: MW-2  
Date Sampled: 01/09/19 12:25  
Percent Solids: N/A  
Initial Volume: 5  
Final Volume: 5  
Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-02  
Sample Matrix: Ground Water  
Units: mg/L  
Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromochloromethane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Bromodichloromethane	ND (0.0006)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Bromoform	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Bromomethane	ND (0.0020)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Carbon Disulfide	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Carbon Tetrachloride	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Chlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Chloroethane	ND (0.0020)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Chloroform	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Chloromethane	ND (0.0020)		8260B		1	01/10/19 19:32	C9A0169	CA91043
cis-1,2-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
cis-1,3-Dichloropropene	ND (0.0004)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Dibromochloromethane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Dibromomethane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Dichlorodifluoromethane	ND (0.0020)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Diethyl Ether	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Di-isopropyl ether	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Ethyl tertiary-butyl ether	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Ethylbenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Hexachlorobutadiene	ND (0.0006)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Hexachloroethane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Isopropylbenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Methyl tert-Butyl Ether	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Methylene Chloride	ND (0.0020)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Naphthalene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
n-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
n-Propylbenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
sec-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Styrene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
tert-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Tertiary-amyl methyl ether	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Tetrachloroethene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043





*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
 Client Project ID: Former Portsmouth Landfill  
 Client Sample ID: MW-2  
 Date Sampled: 01/09/19 12:25  
 Percent Solids: N/A  
 Initial Volume: 5  
 Final Volume: 5  
 Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
 ESS Laboratory Sample ID: 1901204-02  
 Sample Matrix: Ground Water  
 Units: mg/L  
 Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Tetrahydrofuran	ND (0.0050)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Toluene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
trans-1,2-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
trans-1,3-Dichloropropene	ND (0.0004)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Trichloroethene	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Trichlorofluoromethane	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Vinyl Acetate	ND (0.0050)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Vinyl Chloride	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Xylene O	ND (0.0010)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Xylene P,M	ND (0.0020)		8260B		1	01/10/19 19:32	C9A0169	CA91043
Xylenes (Total)	ND (0.0020)		8260B		1	01/10/19 19:32		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	106 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	92 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	101 %		70-130
<i>Surrogate: Toluene-d8</i>	102 %		70-130



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: MW-3  
Date Sampled: 01/09/19 13:20  
Percent Solids: N/A

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-03  
Sample Matrix: Ground Water  
Units: mg/L

Extraction Method: 3005A/200.7

**Total Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.002)		6020A		1	NAR	01/18/19 13:21	50	25	CA91034
Arsenic	ND (0.002)		7010		1	KJK	01/12/19 15:47	50	25	CA91034
<b>Barium</b>	<b>0.519 (0.025)</b>		6010C		1	KJK	01/11/19 22:03	50	25	CA91034
Beryllium	ND (0.0005)		6010C		1	KJK	01/11/19 22:03	50	25	CA91034
Cadmium	ND (0.0025)		6010C		1	KJK	01/11/19 22:03	50	25	CA91034
Chromium	ND (0.010)		6010C		1	KJK	01/11/19 22:03	50	25	CA91034
Cobalt	ND (0.010)		6010C		1	KJK	01/11/19 22:03	50	25	CA91034
Copper	ND (0.010)		6010C		1	KJK	01/11/19 22:03	50	25	CA91034
Lead	ND (0.010)		6010C		1	KJK	01/11/19 22:03	50	25	CA91034
Nickel	ND (0.025)		6010C		1	KJK	01/11/19 22:03	50	25	CA91034
Selenium	ND (0.005)		7010		1	KJK	01/12/19 20:43	50	25	CA91034
Silver	ND (0.005)		6010C		1	KJK	01/11/19 22:03	50	25	CA91034
Thallium	ND (0.002)		6020A		1	NAR	01/14/19 18:27	50	25	CA91034
Vanadium	ND (0.010)		6010C		1	KJK	01/11/19 22:03	50	25	CA91034
Zinc	ND (0.025)		6010C		1	KJK	01/11/19 22:03	50	25	CA91034



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: MW-3  
Date Sampled: 01/09/19 13:20  
Percent Solids: N/A  
Initial Volume: 5  
Final Volume: 5  
Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-03  
Sample Matrix: Ground Water  
Units: mg/L  
Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,1,1-Trichloroethane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,1,2,2-Tetrachloroethane	ND (0.0005)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,1,2-Trichloroethane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,1-Dichloroethane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,1-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,1-Dichloropropene	ND (0.0020)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,2,3-Trichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,2,3-Trichloropropane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,2,4-Trichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,2,4-Trimethylbenzene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,2-Dibromo-3-Chloropropane	ND (0.0050)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,2-Dibromoethane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,2-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,2-Dichloroethane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,2-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,3,5-Trimethylbenzene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,3-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,3-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
<b>1,4-Dichlorobenzene</b>	<b>0.0013</b> (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1,4-Dioxane - Screen	ND (0.500)		8260B		1	01/10/19 19:57	C9A0169	CA91043
1-Chlorohexane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
2,2-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
2-Butanone	ND (0.0100)		8260B		1	01/10/19 19:57	C9A0169	CA91043
2-Chlorotoluene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
2-Hexanone	ND (0.0100)		8260B		1	01/10/19 19:57	C9A0169	CA91043
4-Chlorotoluene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
4-Isopropyltoluene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
4-Methyl-2-Pentanone	ND (0.0250)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Acetone	ND (0.0100)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Benzene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Bromobenzene	ND (0.0020)		8260B		1	01/10/19 19:57	C9A0169	CA91043



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: MW-3  
Date Sampled: 01/09/19 13:20  
Percent Solids: N/A  
Initial Volume: 5  
Final Volume: 5  
Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-03  
Sample Matrix: Ground Water  
Units: mg/L  
Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromochloromethane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Bromodichloromethane	ND (0.0006)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Bromoform	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Bromomethane	ND (0.0020)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Carbon Disulfide	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Carbon Tetrachloride	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
<b>Chlorobenzene</b>	<b>0.0053</b> (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Chloroethane	ND (0.0020)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Chloroform	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Chloromethane	ND (0.0020)		8260B		1	01/10/19 19:57	C9A0169	CA91043
cis-1,2-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
cis-1,3-Dichloropropene	ND (0.0004)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Dibromochloromethane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Dibromomethane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
<b>Dichlorodifluoromethane</b>	<b>0.0068</b> (0.0020)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Diethyl Ether	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Di-isopropyl ether	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Ethyl tertiary-butyl ether	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Ethylbenzene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Hexachlorobutadiene	ND (0.0006)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Hexachloroethane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
<b>Isopropylbenzene</b>	<b>0.0050</b> (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Methyl tert-Butyl Ether	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Methylene Chloride	ND (0.0020)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Naphthalene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
n-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
n-Propylbenzene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
sec-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Styrene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
tert-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Tertiary-amyl methyl ether	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Tetrachloroethene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
 Client Project ID: Former Portsmouth Landfill  
 Client Sample ID: MW-3  
 Date Sampled: 01/09/19 13:20  
 Percent Solids: N/A  
 Initial Volume: 5  
 Final Volume: 5  
 Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
 ESS Laboratory Sample ID: 1901204-03  
 Sample Matrix: Ground Water  
 Units: mg/L  
 Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Tetrahydrofuran	ND (0.0050)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Toluene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
trans-1,2-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
trans-1,3-Dichloropropene	ND (0.0004)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Trichloroethene	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Trichlorofluoromethane	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Vinyl Acetate	ND (0.0050)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Vinyl Chloride	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Xylene O	ND (0.0010)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Xylene P,M	ND (0.0020)		8260B		1	01/10/19 19:57	C9A0169	CA91043
Xylenes (Total)	ND (0.0020)		8260B		1	01/10/19 19:57		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	108 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	101 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	105 %		70-130
<i>Surrogate: Toluene-d8</i>	103 %		70-130



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
 Client Project ID: Former Portsmouth Landfill  
 Client Sample ID: MW-4  
 Date Sampled: 01/09/19 14:30  
 Percent Solids: N/A

ESS Laboratory Work Order: 1901204  
 ESS Laboratory Sample ID: 1901204-04  
 Sample Matrix: Ground Water  
 Units: mg/L

Extraction Method: 3005A/200.7

**Total Metals**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Antimony	ND (0.002)		6020A		1	NAR	01/18/19 13:26	50	25	CA91034
Arsenic	ND (0.002)		7010		1	KJK	01/12/19 15:53	50	25	CA91034
<b>Barium</b>	<b>0.060</b> (0.025)		6010C		1	KJK	01/11/19 22:08	50	25	CA91034
Beryllium	ND (0.0005)		6010C		1	KJK	01/11/19 22:08	50	25	CA91034
<b>Cadmium</b>	<b>0.0030</b> (0.0025)		6010C		1	KJK	01/11/19 22:08	50	25	CA91034
Chromium	ND (0.010)		6010C		1	KJK	01/11/19 22:08	50	25	CA91034
Cobalt	ND (0.010)		6010C		1	KJK	01/11/19 22:08	50	25	CA91034
<b>Copper</b>	<b>0.062</b> (0.010)		6010C		1	KJK	01/11/19 22:08	50	25	CA91034
Lead	ND (0.010)		6010C		1	KJK	01/11/19 22:08	50	25	CA91034
<b>Nickel</b>	<b>0.059</b> (0.025)		6010C		1	KJK	01/11/19 22:08	50	25	CA91034
Selenium	ND (0.005)		7010		1	KJK	01/12/19 21:11	50	25	CA91034
Silver	ND (0.005)		6010C		1	KJK	01/11/19 22:08	50	25	CA91034
Thallium	ND (0.002)		6020A		1	NAR	01/14/19 18:32	50	25	CA91034
Vanadium	ND (0.010)		6010C		1	KJK	01/11/19 22:08	50	25	CA91034
<b>Zinc</b>	<b>1.88</b> (0.025)		6010C		1	KJK	01/11/19 22:08	50	25	CA91034



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: MW-4  
Date Sampled: 01/09/19 14:30  
Percent Solids: N/A  
Initial Volume: 5  
Final Volume: 5  
Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-04  
Sample Matrix: Ground Water  
Units: mg/L  
Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,1,1-Trichloroethane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,1,2,2-Tetrachloroethane	ND (0.0005)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,1,2-Trichloroethane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,1-Dichloroethane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,1-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,1-Dichloropropene	ND (0.0020)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,2,3-Trichlorobenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,2,3-Trichloropropane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,2,4-Trichlorobenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,2,4-Trimethylbenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,2-Dibromo-3-Chloropropane	ND (0.0050)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,2-Dibromoethane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,2-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,2-Dichloroethane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,2-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,3,5-Trimethylbenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,3-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,3-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,4-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1,4-Dioxane - Screen	ND (0.500)		8260B		1	01/10/19 20:23	C9A0169	CA91043
1-Chlorohexane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
2,2-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
2-Butanone	ND (0.0100)		8260B		1	01/10/19 20:23	C9A0169	CA91043
2-Chlorotoluene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
2-Hexanone	ND (0.0100)		8260B		1	01/10/19 20:23	C9A0169	CA91043
4-Chlorotoluene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
4-Isopropyltoluene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
4-Methyl-2-Pentanone	ND (0.0250)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Acetone	ND (0.0100)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Benzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Bromobenzene	ND (0.0020)		8260B		1	01/10/19 20:23	C9A0169	CA91043



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: MW-4  
Date Sampled: 01/09/19 14:30  
Percent Solids: N/A  
Initial Volume: 5  
Final Volume: 5  
Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-04  
Sample Matrix: Ground Water  
Units: mg/L  
Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromochloromethane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Bromodichloromethane	ND (0.0006)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Bromoform	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Bromomethane	ND (0.0020)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Carbon Disulfide	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Carbon Tetrachloride	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Chlorobenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Chloroethane	ND (0.0020)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Chloroform	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Chloromethane	ND (0.0020)		8260B		1	01/10/19 20:23	C9A0169	CA91043
cis-1,2-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
cis-1,3-Dichloropropene	ND (0.0004)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Dibromochloromethane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Dibromomethane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Dichlorodifluoromethane	ND (0.0020)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Diethyl Ether	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Di-isopropyl ether	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Ethyl tertiary-butyl ether	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Ethylbenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Hexachlorobutadiene	ND (0.0006)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Hexachloroethane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Isopropylbenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Methyl tert-Butyl Ether	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Methylene Chloride	ND (0.0020)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Naphthalene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
n-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
n-Propylbenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
sec-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Styrene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
tert-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Tertiary-amyl methyl ether	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
<b>Tetrachloroethene</b>	<b>0.0020</b> (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043





*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: MW-4  
Date Sampled: 01/09/19 14:30  
Percent Solids: N/A  
Initial Volume: 5  
Final Volume: 5  
Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-04  
Sample Matrix: Ground Water  
Units: mg/L  
Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Tetrahydrofuran	ND (0.0050)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Toluene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
trans-1,2-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
trans-1,3-Dichloropropene	ND (0.0004)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Trichloroethene	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Trichlorofluoromethane	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Vinyl Acetate	ND (0.0050)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Vinyl Chloride	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Xylene O	ND (0.0010)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Xylene P,M	ND (0.0020)		8260B		1	01/10/19 20:23	C9A0169	CA91043
Xylenes (Total)	ND (0.0020)		8260B		1	01/10/19 20:23		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	112 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	92 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	106 %		70-130
<i>Surrogate: Toluene-d8</i>	101 %		70-130



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
 Client Project ID: Former Portsmouth Landfill  
 Client Sample ID: Trip Blank  
 Date Sampled: 01/09/19 00:00  
 Percent Solids: N/A  
 Initial Volume: 5  
 Final Volume: 5  
 Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
 ESS Laboratory Sample ID: 1901204-05  
 Sample Matrix: Aqueous  
 Units: mg/L  
 Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,1,1-Trichloroethane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,1,2,2-Tetrachloroethane	ND (0.0005)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,1,2-Trichloroethane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,1-Dichloroethane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,1-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,1-Dichloropropene	ND (0.0020)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,2,3-Trichlorobenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,2,3-Trichloropropane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,2,4-Trichlorobenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,2,4-Trimethylbenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,2-Dibromo-3-Chloropropane	ND (0.0050)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,2-Dibromoethane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,2-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,2-Dichloroethane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,2-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,3,5-Trimethylbenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,3-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,3-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,4-Dichlorobenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1,4-Dioxane - Screen	ND (0.500)		8260B		1	01/10/19 18:41	C9A0169	CA91043
1-Chlorohexane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
2,2-Dichloropropane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
2-Butanone	ND (0.0100)		8260B		1	01/10/19 18:41	C9A0169	CA91043
2-Chlorotoluene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
2-Hexanone	ND (0.0100)		8260B		1	01/10/19 18:41	C9A0169	CA91043
4-Chlorotoluene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
4-Isopropyltoluene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
4-Methyl-2-Pentanone	ND (0.0250)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Acetone	ND (0.0100)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Benzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Bromobenzene	ND (0.0020)		8260B		1	01/10/19 18:41	C9A0169	CA91043



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill  
Client Sample ID: Trip Blank  
Date Sampled: 01/09/19 00:00  
Percent Solids: N/A  
Initial Volume: 5  
Final Volume: 5  
Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
ESS Laboratory Sample ID: 1901204-05  
Sample Matrix: Aqueous  
Units: mg/L  
Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromochloromethane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Bromodichloromethane	ND (0.0006)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Bromoform	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Bromomethane	ND (0.0020)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Carbon Disulfide	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Carbon Tetrachloride	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Chlorobenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Chloroethane	ND (0.0020)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Chloroform	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Chloromethane	ND (0.0020)		8260B		1	01/10/19 18:41	C9A0169	CA91043
cis-1,2-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
cis-1,3-Dichloropropene	ND (0.0004)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Dibromochloromethane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Dibromomethane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Dichlorodifluoromethane	ND (0.0020)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Diethyl Ether	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Di-isopropyl ether	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Ethyl tertiary-butyl ether	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Ethylbenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Hexachlorobutadiene	ND (0.0006)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Hexachloroethane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Isopropylbenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Methyl tert-Butyl Ether	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Methylene Chloride	ND (0.0020)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Naphthalene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
n-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
n-Propylbenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
sec-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Styrene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
tert-Butylbenzene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Tertiary-amyl methyl ether	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Tetrachloroethene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
 Client Project ID: Former Portsmouth Landfill  
 Client Sample ID: Trip Blank  
 Date Sampled: 01/09/19 00:00  
 Percent Solids: N/A  
 Initial Volume: 5  
 Final Volume: 5  
 Extraction Method: 5030B

ESS Laboratory Work Order: 1901204  
 ESS Laboratory Sample ID: 1901204-05  
 Sample Matrix: Aqueous  
 Units: mg/L  
 Analyst: MD

**8260B Volatile Organic Compounds**

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Tetrahydrofuran	ND (0.0050)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Toluene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
trans-1,2-Dichloroethene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
trans-1,3-Dichloropropene	ND (0.0004)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Trichloroethene	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Trichlorofluoromethane	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Vinyl Acetate	ND (0.0050)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Vinyl Chloride	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Xylene O	ND (0.0010)		8260B		1	01/10/19 18:41	C9A0169	CA91043
Xylene P,M	ND (0.0020)		8260B		1	01/10/19 18:41	C9A0169	CA91043

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	108 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	93 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	102 %		70-130
<i>Surrogate: Toluene-d8</i>	103 %		70-130



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
 Client Project ID: Former Portsmouth Landfill

ESS Laboratory Work Order: 1901204

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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**Total Metals**

**Batch CA91034 - 3005A/200.7**

**Blank**

Antimony	ND	0.002	mg/L							
Arsenic	ND	0.002	mg/L							
Barium	ND	0.025	mg/L							
Beryllium	ND	0.0005	mg/L							
Cadmium	ND	0.0025	mg/L							
Chromium	ND	0.010	mg/L							
Cobalt	ND	0.010	mg/L							
Copper	ND	0.010	mg/L							
Lead	ND	0.010	mg/L							
Nickel	ND	0.025	mg/L							
Selenium	ND	0.005	mg/L							
Silver	ND	0.005	mg/L							
Thallium	ND	0.002	mg/L							
Vanadium	ND	0.010	mg/L							
Zinc	ND	0.025	mg/L							

**LCS**

Antimony	0.332	0.012	mg/L	0.2500	133	80-120				B+
Arsenic	0.265	0.062	mg/L	0.2500	106	80-120				
Barium	0.238	0.025	mg/L	0.2500	95	80-120				
Beryllium	0.0235	0.0005	mg/L	0.02500	94	80-120				
Cadmium	0.114	0.0025	mg/L	0.1250	91	80-120				
Chromium	0.234	0.010	mg/L	0.2500	94	80-120				
Cobalt	0.226	0.010	mg/L	0.2500	91	80-120				
Copper	0.255	0.010	mg/L	0.2500	102	80-120				
Lead	0.234	0.010	mg/L	0.2500	94	80-120				
Nickel	0.227	0.025	mg/L	0.2500	91	80-120				
Selenium	0.525	0.125	mg/L	0.5000	105	80-120				
Silver	0.124	0.005	mg/L	0.1250	99	80-120				
Thallium	0.261	0.012	mg/L	0.2500	104	80-120				
Vanadium	0.236	0.010	mg/L	0.2500	94	80-120				
Zinc	0.233	0.025	mg/L	0.2500	93	80-120				

**LCS Dup**

Antimony	0.729	0.012	mg/L	0.2500	292	80-120	75	20		B+
Arsenic	0.266	0.062	mg/L	0.2500	106	80-120	0.4	20		
Barium	0.244	0.025	mg/L	0.2500	98	80-120	3	20		
Beryllium	0.0241	0.0005	mg/L	0.02500	97	80-120	3	20		
Cadmium	0.116	0.0025	mg/L	0.1250	93	80-120	2	20		
Chromium	0.240	0.010	mg/L	0.2500	96	80-120	3	20		
Cobalt	0.234	0.010	mg/L	0.2500	93	80-120	3	20		
Copper	0.278	0.010	mg/L	0.2500	111	80-120	9	20		
Lead	0.240	0.010	mg/L	0.2500	96	80-120	2	20		
Nickel	0.234	0.025	mg/L	0.2500	93	80-120	3	20		
Selenium	0.536	0.125	mg/L	0.5000	107	80-120	2	20		
Silver	0.127	0.005	mg/L	0.1250	101	80-120	2	20		



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill

ESS Laboratory Work Order: 1901204

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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**Total Metals**

**Batch CA91034 - 3005A/200.7**

Thallium	0.651	0.012	mg/L	0.2500		261	80-120	86	20	B++
Vanadium	0.242	0.010	mg/L	0.2500		97	80-120	3	20	
Zinc	0.241	0.025	mg/L	0.2500		96	80-120	4	20	

**8260B Volatile Organic Compounds**

**Batch CA91043 - 5030B**

**Blank**

1,1,1,2-Tetrachloroethane	ND	0.0010	mg/L
1,1,1-Trichloroethane	ND	0.0010	mg/L
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L
1,1,2-Trichloroethane	ND	0.0010	mg/L
1,1-Dichloroethane	ND	0.0010	mg/L
1,1-Dichloroethene	ND	0.0010	mg/L
1,1-Dichloropropene	ND	0.0020	mg/L
1,2,3-Trichlorobenzene	ND	0.0010	mg/L
1,2,3-Trichloropropane	ND	0.0010	mg/L
1,2,4-Trichlorobenzene	ND	0.0010	mg/L
1,2,4-Trimethylbenzene	ND	0.0010	mg/L
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/L
1,2-Dibromoethane	ND	0.0010	mg/L
1,2-Dichlorobenzene	ND	0.0010	mg/L
1,2-Dichloroethane	ND	0.0010	mg/L
1,2-Dichloropropane	ND	0.0010	mg/L
1,3,5-Trimethylbenzene	ND	0.0010	mg/L
1,3-Dichlorobenzene	ND	0.0010	mg/L
1,3-Dichloropropane	ND	0.0010	mg/L
1,4-Dichlorobenzene	ND	0.0010	mg/L
1,4-Dioxane - Screen	ND	0.500	mg/L
1-Chlorohexane	ND	0.0010	mg/L
2,2-Dichloropropane	ND	0.0010	mg/L
2-Butanone	ND	0.0100	mg/L
2-Chlorotoluene	ND	0.0010	mg/L
2-Hexanone	ND	0.0100	mg/L
4-Chlorotoluene	ND	0.0010	mg/L
4-Isopropyltoluene	ND	0.0010	mg/L
4-Methyl-2-Pentanone	ND	0.0250	mg/L
Acetone	ND	0.0100	mg/L
Benzene	ND	0.0010	mg/L
Bromobenzene	ND	0.0020	mg/L
Bromochloromethane	ND	0.0010	mg/L
Bromodichloromethane	ND	0.0006	mg/L
Bromoform	ND	0.0010	mg/L
Bromomethane	ND	0.0020	mg/L
Carbon Disulfide	ND	0.0010	mg/L
Carbon Tetrachloride	ND	0.0010	mg/L



CERTIFICATE OF ANALYSIS

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill

ESS Laboratory Work Order: 1901204

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

**Batch CA91043 - 5030B**

Chlorobenzene	ND	0.0010	mg/L							
Chloroethane	ND	0.0020	mg/L							
Chloroform	ND	0.0010	mg/L							
Chloromethane	ND	0.0020	mg/L							
cis-1,2-Dichloroethene	ND	0.0010	mg/L							
cis-1,3-Dichloropropene	ND	0.0004	mg/L							
Dibromochloromethane	ND	0.0010	mg/L							
Dibromomethane	ND	0.0010	mg/L							
Dichlorodifluoromethane	ND	0.0020	mg/L							
Diethyl Ether	ND	0.0010	mg/L							
Di-isopropyl ether	ND	0.0010	mg/L							
Ethyl tertiary-butyl ether	ND	0.0010	mg/L							
Ethylbenzene	ND	0.0010	mg/L							
Hexachlorobutadiene	ND	0.0006	mg/L							
Hexachloroethane	ND	0.0010	mg/L							
Isopropylbenzene	ND	0.0010	mg/L							
Methyl tert-Butyl Ether	ND	0.0010	mg/L							
Methylene Chloride	ND	0.0020	mg/L							
Naphthalene	ND	0.0010	mg/L							
n-Butylbenzene	ND	0.0010	mg/L							
n-Propylbenzene	ND	0.0010	mg/L							
sec-Butylbenzene	ND	0.0010	mg/L							
Styrene	ND	0.0010	mg/L							
tert-Butylbenzene	ND	0.0010	mg/L							
Tertiary-amyl methyl ether	ND	0.0010	mg/L							
Tetrachloroethene	ND	0.0010	mg/L							
Tetrahydrofuran	ND	0.0050	mg/L							
Toluene	ND	0.0010	mg/L							
trans-1,2-Dichloroethene	ND	0.0010	mg/L							
trans-1,3-Dichloropropene	ND	0.0004	mg/L							
Trichloroethene	ND	0.0010	mg/L							
Trichlorofluoromethane	ND	0.0010	mg/L							
Vinyl Acetate	ND	0.0050	mg/L							
Vinyl Chloride	ND	0.0010	mg/L							
Xylene O	ND	0.0010	mg/L							
Xylene P,M	ND	0.0020	mg/L							
Xylenes (Total)	ND	0.0020	mg/L							
Surrogate: 1,2-Dichloroethane-d4	0.0253		mg/L	0.02500		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.0231		mg/L	0.02500		93	70-130			
Surrogate: Dibromofluoromethane	0.0245		mg/L	0.02500		98	70-130			
Surrogate: Toluene-d8	0.0259		mg/L	0.02500		104	70-130			

**LCS**

1,1,1,2-Tetrachloroethane	9.72		ug/L	10.00		97	70-130			
1,1,1-Trichloroethane	10.3		ug/L	10.00		103	70-130			
1,1,2,2-Tetrachloroethane	9.21		ug/L	10.00		92	70-130			



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
 Client Project ID: Former Portsmouth Landfill

ESS Laboratory Work Order: 1901204

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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**8260B Volatile Organic Compounds**

**Batch CA91043 - 5030B**

1,1,2-Trichloroethane	8.98		ug/L	10.00		90	70-130			
1,1-Dichloroethane	8.85		ug/L	10.00		88	70-130			
1,1-Dichloroethene	9.28		ug/L	10.00		93	70-130			
1,1-Dichloropropene	9.74		ug/L	10.00		97	70-130			
1,2,3-Trichlorobenzene	10.0		ug/L	10.00		100	70-130			
1,2,3-Trichloropropane	9.56		ug/L	10.00		96	70-130			
1,2,4-Trichlorobenzene	9.70		ug/L	10.00		97	70-130			
1,2,4-Trimethylbenzene	10.4		ug/L	10.00		104	70-130			
1,2-Dibromo-3-Chloropropane	9.85		ug/L	10.00		98	70-130			
1,2-Dibromoethane	10.4		ug/L	10.00		104	70-130			
1,2-Dichlorobenzene	10.1		ug/L	10.00		101	70-130			
1,2-Dichloroethane	9.30		ug/L	10.00		93	70-130			
1,2-Dichloropropane	8.74		ug/L	10.00		87	70-130			
1,3,5-Trimethylbenzene	10.3		ug/L	10.00		103	70-130			
1,3-Dichlorobenzene	10.3		ug/L	10.00		103	70-130			
1,3-Dichloropropane	9.64		ug/L	10.00		96	70-130			
1,4-Dichlorobenzene	10.3		ug/L	10.00		103	70-130			
1,4-Dioxane - Screen	212		ug/L	200.0		106	0-332			
1-Chlorohexane	8.12		ug/L	10.00		81	70-130			
2,2-Dichloropropane	11.0		ug/L	10.00		110	70-130			
2-Butanone	47.0		ug/L	50.00		94	70-130			
2-Chlorotoluene	9.91		ug/L	10.00		99	70-130			
2-Hexanone	47.4		ug/L	50.00		95	70-130			
4-Chlorotoluene	10.4		ug/L	10.00		104	70-130			
4-Isopropyltoluene	10.3		ug/L	10.00		103	70-130			
4-Methyl-2-Pentanone	47.9		ug/L	50.00		96	70-130			
Acetone	42.7		ug/L	50.00		85	70-130			
Benzene	9.45		ug/L	10.00		94	70-130			
Bromobenzene	10.0		ug/L	10.00		100	70-130			
Bromochloromethane	9.42		ug/L	10.00		94	70-130			
Bromodichloromethane	9.40		ug/L	10.00		94	70-130			
Bromoform	11.3		ug/L	10.00		113	70-130			
Bromomethane	12.7		ug/L	10.00		127	70-130			
Carbon Disulfide	9.58		ug/L	10.00		96	70-130			
Carbon Tetrachloride	10.8		ug/L	10.00		108	70-130			
Chlorobenzene	9.59		ug/L	10.00		96	70-130			
Chloroethane	8.88		ug/L	10.00		89	70-130			
Chloroform	9.26		ug/L	10.00		93	70-130			
Chloromethane	8.17		ug/L	10.00		82	70-130			
cis-1,2-Dichloroethene	9.56		ug/L	10.00		96	70-130			
cis-1,3-Dichloropropene	8.26		ug/L	10.00		83	70-130			
Dibromochloromethane	8.30		ug/L	10.00		83	70-130			
Dibromomethane	9.41		ug/L	10.00		94	70-130			
Dichlorodifluoromethane	8.38		ug/L	10.00		84	70-130			
Diethyl Ether	9.07		ug/L	10.00		91	70-130			





CERTIFICATE OF ANALYSIS

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill

ESS Laboratory Work Order: 1901204

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

**Batch CA91043 - 5030B**

Di-isopropyl ether	9.24		ug/L	10.00		92	70-130			
Ethyl tertiary-butyl ether	9.16		ug/L	10.00		92	70-130			
Ethylbenzene	9.74		ug/L	10.00		97	70-130			
Hexachlorobutadiene	10.9		ug/L	10.00		109	70-130			
Hexachloroethane	12.1		ug/L	10.00		121	70-130			
Isopropylbenzene	10.2		ug/L	10.00		102	70-130			
Methyl tert-Butyl Ether	9.83		ug/L	10.00		98	70-130			
Methylene Chloride	8.48		ug/L	10.00		85	70-130			
Naphthalene	11.3		ug/L	10.00		113	70-130			
n-Butylbenzene	9.58		ug/L	10.00		96	70-130			
n-Propylbenzene	10.0		ug/L	10.00		100	70-130			
sec-Butylbenzene	10.4		ug/L	10.00		104	70-130			
Styrene	8.72		ug/L	10.00		87	70-130			
tert-Butylbenzene	10.3		ug/L	10.00		103	70-130			
Tertiary-amyl methyl ether	9.47		ug/L	10.00		95	70-130			
Tetrachloroethene	8.78		ug/L	10.00		88	70-130			
Tetrahydrofuran	9.82		ug/L	10.00		98	70-130			
Toluene	9.18		ug/L	10.00		92	70-130			
trans-1,2-Dichloroethene	9.07		ug/L	10.00		91	70-130			
trans-1,3-Dichloropropene	9.23		ug/L	10.00		92	70-130			
Trichloroethene	9.01		ug/L	10.00		90	70-130			
Trichlorofluoromethane	9.43		ug/L	10.00		94	70-130			
Vinyl Acetate	11.0		ug/L	10.00		110	70-130			
Vinyl Chloride	9.32		ug/L	10.00		93	70-130			
Xylene O	10.3		ug/L	10.00		103	70-130			
Xylene P,M	20.7		ug/L	20.00		104	70-130			
Xylenes (Total)	31.1		mg/L							
Surrogate: 1,2-Dichloroethane-d4	0.0241		mg/L	0.02500		96	70-130			
Surrogate: 4-Bromofluorobenzene	0.0258		mg/L	0.02500		103	70-130			
Surrogate: Dibromofluoromethane	0.0246		mg/L	0.02500		98	70-130			
Surrogate: Toluene-d8	0.0244		mg/L	0.02500		97	70-130			

**LCS Dup**

1,1,1,2-Tetrachloroethane	9.75		ug/L	10.00		98	70-130	0.3	25	
1,1,1-Trichloroethane	10.6		ug/L	10.00		106	70-130	3	25	
1,1,2,2-Tetrachloroethane	9.01		ug/L	10.00		90	70-130	2	25	
1,1,2-Trichloroethane	9.13		ug/L	10.00		91	70-130	2	25	
1,1-Dichloroethane	9.23		ug/L	10.00		92	70-130	4	25	
1,1-Dichloroethene	9.67		ug/L	10.00		97	70-130	4	25	
1,1-Dichloropropene	10.2		ug/L	10.00		102	70-130	5	25	
1,2,3-Trichlorobenzene	9.63		ug/L	10.00		96	70-130	4	25	
1,2,3-Trichloropropane	9.35		ug/L	10.00		94	70-130	2	25	
1,2,4-Trichlorobenzene	9.42		ug/L	10.00		94	70-130	3	25	
1,2,4-Trimethylbenzene	10.6		ug/L	10.00		106	70-130	1	25	
1,2-Dibromo-3-Chloropropane	9.34		ug/L	10.00		93	70-130	5	25	
1,2-Dibromoethane	10.4		ug/L	10.00		104	70-130	0.5	25	



CERTIFICATE OF ANALYSIS

Client Name: ATC Group Services  
 Client Project ID: Former Portsmouth Landfill

ESS Laboratory Work Order: 1901204

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

**Batch CA91043 - 5030B**

1,2-Dichlorobenzene	10.1		ug/L	10.00		101	70-130	0.2	25	
1,2-Dichloroethane	9.48		ug/L	10.00		95	70-130	2	25	
1,2-Dichloropropane	9.15		ug/L	10.00		92	70-130	5	25	
1,3,5-Trimethylbenzene	10.5		ug/L	10.00		105	70-130	2	25	
1,3-Dichlorobenzene	10.2		ug/L	10.00		102	70-130	0.5	25	
1,3-Dichloropropane	9.84		ug/L	10.00		98	70-130	2	25	
1,4-Dichlorobenzene	10.3		ug/L	10.00		103	70-130	0.2	25	
1,4-Dioxane - Screen	208		ug/L	200.0		104	0-332	2	200	
1-Chlorohexane	8.54		ug/L	10.00		85	70-130	5	25	
2,2-Dichloropropane	11.3		ug/L	10.00		113	70-130	2	25	
2-Butanone	46.0		ug/L	50.00		92	70-130	2	25	
2-Chlorotoluene	9.96		ug/L	10.00		100	70-130	0.5	25	
2-Hexanone	45.8		ug/L	50.00		92	70-130	3	25	
4-Chlorotoluene	10.3		ug/L	10.00		103	70-130	0.4	25	
4-Isopropyltoluene	10.6		ug/L	10.00		106	70-130	2	25	
4-Methyl-2-Pentanone	48.3		ug/L	50.00		97	70-130	0.8	25	
Acetone	40.7		ug/L	50.00		81	70-130	5	25	
Benzene	9.73		ug/L	10.00		97	70-130	3	25	
Bromobenzene	9.78		ug/L	10.00		98	70-130	2	25	
Bromochloromethane	9.65		ug/L	10.00		96	70-130	2	25	
Bromodichloromethane	9.51		ug/L	10.00		95	70-130	1	25	
Bromoform	10.8		ug/L	10.00		108	70-130	5	25	
Bromomethane	12.5		ug/L	10.00		125	70-130	1	25	
Carbon Disulfide	9.79		ug/L	10.00		98	70-130	2	25	
Carbon Tetrachloride	11.0		ug/L	10.00		110	70-130	2	25	
Chlorobenzene	9.89		ug/L	10.00		99	70-130	3	25	
Chloroethane	9.28		ug/L	10.00		93	70-130	4	25	
Chloroform	9.57		ug/L	10.00		96	70-130	3	25	
Chloromethane	8.37		ug/L	10.00		84	70-130	2	25	
cis-1,2-Dichloroethene	9.65		ug/L	10.00		96	70-130	0.9	25	
cis-1,3-Dichloropropene	8.37		ug/L	10.00		84	70-130	1	25	
Dibromochloromethane	8.31		ug/L	10.00		83	70-130	0.1	25	
Dibromomethane	9.69		ug/L	10.00		97	70-130	3	25	
Dichlorodifluoromethane	8.55		ug/L	10.00		86	70-130	2	25	
Diethyl Ether	9.35		ug/L	10.00		94	70-130	3	25	
Di-isopropyl ether	9.66		ug/L	10.00		97	70-130	4	25	
Ethyl tertiary-butyl ether	9.42		ug/L	10.00		94	70-130	3	25	
Ethylbenzene	10.0		ug/L	10.00		100	70-130	3	25	
Hexachlorobutadiene	10.5		ug/L	10.00		105	70-130	4	25	
Hexachloroethane	11.9		ug/L	10.00		119	70-130	2	25	
Isopropylbenzene	10.4		ug/L	10.00		104	70-130	2	25	
Methyl tert-Butyl Ether	9.98		ug/L	10.00		100	70-130	2	25	
Methylene Chloride	9.07		ug/L	10.00		91	70-130	7	25	
Naphthalene	10.6		ug/L	10.00		106	70-130	6	25	
n-Butylbenzene	9.49		ug/L	10.00		95	70-130	0.9	25	



CERTIFICATE OF ANALYSIS

Client Name: ATC Group Services  
 Client Project ID: Former Portsmouth Landfill

ESS Laboratory Work Order: 1901204

**Quality Control Data**

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8260B Volatile Organic Compounds

**Batch CA91043 - 5030B**

n-Propylbenzene	10.1		ug/L	10.00		101	70-130	0.7	25	
sec-Butylbenzene	10.4		ug/L	10.00		104	70-130	0.2	25	
Styrene	8.92		ug/L	10.00		89	70-130	2	25	
tert-Butylbenzene	10.4		ug/L	10.00		104	70-130	0.9	25	
Tertiary-amyl methyl ether	9.95		ug/L	10.00		100	70-130	5	25	
Tetrachloroethene	9.07		ug/L	10.00		91	70-130	3	25	
Tetrahydrofuran	9.85		ug/L	10.00		98	70-130	0.3	25	
Toluene	9.44		ug/L	10.00		94	70-130	3	25	
trans-1,2-Dichloroethene	9.19		ug/L	10.00		92	70-130	1	25	
trans-1,3-Dichloropropene	9.19		ug/L	10.00		92	70-130	0.4	25	
Trichloroethene	9.39		ug/L	10.00		94	70-130	4	25	
Trichlorofluoromethane	9.98		ug/L	10.00		100	70-130	6	25	
Vinyl Acetate	11.5		ug/L	10.00		115	70-130	5	25	
Vinyl Chloride	9.24		ug/L	10.00		92	70-130	0.9	25	
Xylene O	10.8		ug/L	10.00		108	70-130	5	25	
Xylene P,M	21.6		ug/L	20.00		108	70-130	4	25	
Xylenes (Total)	32.4		mg/L							
Surrogate: 1,2-Dichloroethane-d4	0.0236		mg/L	0.02500		95	70-130			
Surrogate: 4-Bromofluorobenzene	0.0256		mg/L	0.02500		102	70-130			
Surrogate: Dibromofluoromethane	0.0245		mg/L	0.02500		98	70-130			
Surrogate: Toluene-d8	0.0244		mg/L	0.02500		98	70-130			



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill

ESS Laboratory Work Order: 1901204

**Notes and Definitions**

- U Analyte included in the analysis, but not detected
- D+ Relative percent difference for duplicate is outside of criteria (D+).
- D Diluted.
- B+ Blank Spike recovery is above upper control limit (B+).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report
- RL Reporting Limit
- EDL Estimated Detection Limit
- MF Membrane Filtration
- MPN Most Probably Number
- TNTC Too numerous to Count
- CFU Colony Forming Units



*CERTIFICATE OF ANALYSIS*

Client Name: ATC Group Services  
Client Project ID: Former Portsmouth Landfill

ESS Laboratory Work Order: 1901204

**ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS**

**ENVIRONMENTAL**

Rhode Island Potable and Non Potable Water: LAI00179  
<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750  
[http://www.ct.gov/dph/lib/dph/environmental\\_health/environmental\\_laboratories/pdf/OutofStateCommercialLaboratories.pdf](http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf)

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002  
<http://www.maine.gov/dhhs/meecd/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002  
<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424  
<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313  
<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006  
[http://datamine2.state.nj.us/DEP\\_OPRA/OpraMain/pi\\_main?mode=pi\\_by\\_site&sort\\_order=PI\\_NAMEA&Select+a+Site:=58715](http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715)

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752  
<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory

Division of Thielsch Engineering, Inc.  
 185 Frances Avenue, Cranston RI 02910  
 Tel. (401) 461-7181 Fax (401) 461-4488  
 www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 1901204

Turn Time: 5-Day Rush:  
 Regulatory State: RI GA Groundwater Objectives  
 Is this project for any of the following?:  
 MA-MCP  CT-RCP  RGP  Remediation

Reporting Limits RI GA Groundwater Objectives  
 Electronic Deliverables  Limit Checker  Excel  
 Other (Please Specify) → pdf

Company Name: ATC Group Services, LLC  
 Project #: 3010000238  
 Project Name: Former Portsmouth Landfill  
 Contact Person: Stephen Gautie  
 Address: 400 Reservoir Ave., Suite 2C  
 City: Providence State: Rhode Island Zip Code: 02907 PO #: 3010000238  
 Telephone Number: (401) 639-4272 FAX Number: Email Address: stephen.gautie@atcgs.com

Analysis	VOC by 8260	Total Sb, As, Ba, Be, Cd, Cr	Total Co, Cu, Pb, Ni, Se, Ag	Total Ti, V, Zn																	
	X	X	X	X																	
	X	X	X	X																	
	X	X	X	X																	
	X	X	X	X																	
	X																				

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID
1	1/9/19	11:10	Grab	Ground Water	MW-1
2		12:25	Grab	Ground Water	MW-2
3		1:20	Grab	Ground Water	MW-3
4		2:30	Grab	Ground Water	MW-4
					Trip Blank

Container Type: AG-Amber Glass B-BOD Bottle G-Glass P-Poly S-Sterile V-Vial O-Other  
 Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAcAc, NaOH 9-NH4Cl 10-DI H2O 11-Other\*  
 Number of Containers: 15 4\*

**Laboratory Use Only**  
 Cooler Present:   
 Seals Intact:   
 Cooler Temperature: 2.0 °C ICE REC

Sampled by: AK  
 Comments: Please specify "Other" preservative and containers types in this space  
 \*Total Metals: one container per sample for all listed 15 metals.

Relinquished by: (Signature, Date & Time) <i>Adrian</i> 1/9/19 4:00	Received By: (Signature, Date & Time) <i>R. Adams</i> 1/10/19 9:00	Relinquished By: (Signature, Date & Time) <i>R. Adams</i> 1/10/19 10:15	Received By: (Signature, Date & Time) <i>[Signature]</i> 1/10/19 10:50
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~~1706086~~

CONSTITUENTS FOR DETECTION MONITORING (1)

Common name (2)	CAS RN (3)
Inorganic Constituents:	
(1) Antimony.....	(Total)
(2) Arsenic.....	(Total)
(3) Barium.....	(Total)
(4) Beryllium.....	(Total)
(5) Cadmium.....	(Total)
(6) Chromium.....	(Total)
(7) Cobalt.....	(Total)
(8) Copper.....	(Total)
(9) Lead.....	(Total)
(10) Nickel.....	(Total)
(11) Selenium.....	(Total)
(12) Silver.....	(Total)
(13) Thallium.....	(Total)
(14) Vanadium.....	(Total)
(15) Zinc.....	(Total)

↓ 8260